IN THE SPECIFICATION:

Please amend the paragraph starting on page 29, line 5 as follows:

~~The following equation 1 shows the relationship between the camera coordinate system and the reference object coordinate system defined in terms of X, Y, Z, α, β, and γ.~~

~~(Equation 1)~~

Please amend the paragraph starting on page 29, line 15 as follows:

As shown in Fig. 6, ~~tables~~ graphs each corresponding to one of the variables for camera positions X, Y, Z, and camera directions α, β, and γ are prepared and all the values of X, Y, Z, α, β, and γ obtained for all the combinations are polled in the ~~table~~ graphs. When the values X, Y, Z, α, β, and γ are calculated for all combinations of arbitrarily selected three circle markings and three registered positional data, some of the combinations will be correct, and yield accurate values for X, Y, Z, α, β, and γ. The value that forms a peak in each ~~table~~ graph is considered as the valid value. A point in Fig. 6 pointed by an arrow in the upward direction represents the valid value for that variable.

Please amend the paragraph starting on page 31, line 17 as follows:

At this point, a possible existence region is considered. The possible existence region for silhouette image 1 is the conical region 82 having the center of the camera viewpoint 81 as its vertex and the object image within the silhouette image 1 as its cross sectional shape. The possible existence regions for other silhouette images can be similarly defined. Thus, a target object will necessarily exist (unless there is an error in the silhouette images) inside the possible existence region. This process can be considered to correspond to an operation to cut the portions outside the silhouette from

a gypsum block (a modeling material analogous to clay, styrofoam, etc.) and finally cut out the object.

Please amend the paragraph starting on page 32, line 1 as follows:

The group of voxels extracted in this manner represents the three-dimensional shape of the object. However, detail of the object shape cannot be represented by the rough shape. For example, care must be taken in a portion which cannot be observed as a silhouette outline (for example, the inside of a cup), because the rough shape will be calculated in a condition with the portion filled in. One method for accurately calculating such a [[convex]] concave shape is a space coding method which will be described next.

Please amend the paragraph starting on page 36, line 4 as follows:

The following is a summary that repeats the effect of the method as described above.

1. In the silhouette method, three-dimensional shape information can be obtained irrespective of the color of the target, but [[convex]] concave shape portions cannot be accurately measured.
2. A triangulation method using a laser light and a space coding method for projecting a plurality of black-and-white patterns are available for accurately determining the shape of the [[convex]] concave portions, but in these methods, data cannot be obtained for black color portions and for mirror reflective sections.
3. By combining the rough shape extraction by the silhouette method and, for example, space coding, it is possible to obtain good three-dimensional shape

measurements for both [[convex]] concave shapes and black and mirror reflective sections.

Please amend the paragraph starting on page 49, line 26 as follows:

As described, according to the present invention, by using both rough shape information and detailed shape information obtained by light irradiation, it is possible to obtain good three-dimensional shape measurements for both [[convex]] concave shape and dark colored section and mirror reflective section.

Please amend the paragraph starting on page 32, line 20 as follows:

Fig. 10 shows, for descriptive purpose, an example of a code when three types of pattern lights are sequentially projected. If each pattern is considered as 8-bit data, the [[light]] dark portion of pattern A (shown as (A) in Fig. 10) is (1111) and the [[dark]] light portion of pattern A is (0000), and the overall pattern can be represented by 8 bits, (11110000). Similarly, pattern B (shown as (B) in Fig. 10) is (11001100) and pattern C (shown as (C) in Fig. 10) is (10101010).

Please amend the paragraph starting on page 39, line 20 as follows:

At the final three-dimensional shape extraction step, only the obtained object surface candidates that exist within the possible existence region for the surface are extracted. In the case shown in Fig. 13, for example, although eight object surface candidates are originally present, the distance between the candidates are large. If the determined possible existence region for a surface is the portion indicated by the [[slashes]] cross-hatched region, the only candidate among the eight candidates that fits in the possible existence region for a surface is the candidate indicated by the reference

numeral 130. Thus, the circle shown by the reference numeral 130 is extracted as the final three-dimensional shape.

Please amend the paragraph starting on page 39, line 22 as follows:

~~(Date recording)~~ (Data recording)

Please amend the paragraph starting on page 40, line 1 as follows:

[[Foe]] For example, the section where the rough shape data is taken as the final data can be considered as having lower reliability than the section where the detailed shape data is used as the final data. It is therefore preferable to record the data with the reliability evaluation value for each section of the three-dimensional data.

Please amend the paragraph starting on page 40, line 20 as follows:

In this manner, by recording the reliability data along with the three-dimensional shape data, it is possible to proceed with the integration process while weighting the data based on the reliability to integrate the produced three-dimensional shape data and three-dimensional shape data of the same target but obtained by different method or device.

Please amend the paragraph starting on page 41, line 23 as follows:

~~(Others)~~ (Miscellaneous)

Please amend the paragraph starting on page 47, line 1 as follows:

The color information at the left and at the right of the characteristic point is assigned as a property. In order to stabilize the property assignment, it is preferable to average the color data within a region between right and left characteristic points. Also, it is possible to average the color data within a region after region division is applied to the image.

3. Associate characteristic points between images from a plurality of viewpoints based on the property.